

PLANTAE PAPUANAE ARCHBOLDIANAE, XIX *

LILY M. PERRY

THIS PAPER covers the Cunoniaceae of Papuasias in the Arnold Arboretum herbarium. The following genera are represented: *Spiraeanthemum*, *Gillbeea*, *Opocunonia*, *Spiraeopsis*, *Ceratopetalum*, *Schizomeria*, *Aistopetalum*, *Weinmannia*, and *Pullea*. I have found nothing to match either *Kaernbachia* or *Stollaea*. The latter, from the description, appears exceedingly close to the genus *Opocunonia*, which Schlechter accepted as having fleshy fruit. In the abundant material of this genus at hand, it can now be shown that the fruit is capsular and very similar to that described for *Stollaea*. The fruit of *Aistopetalum*, however, is a drupe; there are, accordingly, two genera with drupaceous fruits represented in New Guinea. Some reductions have been made, others may need to be made. Wherever species have been added to a genus (except in *Weinmannia*), a brief key is given to help future workers evaluate the species. In *Weinmannia*, because of the interrelationships of the species, it would be necessary to prepare a key including the Malaysian and Polynesian species as well; we do not have sufficient material for such a key. The genus *Gillbeea* is represented by two collections (*Clemens 3430, 3769*) which practically match the figure of Schlechter's *G. papuana*. The other genera are elaborated below.

SPIRAEANTHEMUM A. Gray

KEY TO THE SPECIES

- Leaves denticulate, chartaceous.....*S. Kajewskii*.
 Leaves entire or inconspicuously crenulate-serrulate, coriaceous (except in *S. parvifolium*).
 Pubescence of the branchlets, the under surface of the leaves, and the inflorescence dense and shaggy; calyx shortly villous or pilose.....*S. Pulleanum*.
 Pubescence of the branchlets and inflorescence shorter, usually \pm appressed; calyx glabrous.
 Leaves four in a verticil, cuspidate-acuminate; scales of the disk ovate.....*S. integrifolium*.
 Leaves opposite or ternate, not cuspidate-acuminate; scales of the disk oblong or quadrate, not ovate.
 Leaves small, 2-2.7 \times 1-1.7 cm., chartaceous; carpels villous; styles subclavate.....*S. parvifolium*.
 Leaves larger, 5.5-13 \times 2.5-6 cm., coriaceous; carpels puberulous or almost glabrous; styles subulate.
 Axis of the inflorescence hirtellous or subtomentose....
 *S. reticulatum*.

*Botanical Results of the Richard Archbold Expeditions. See Jour. Arnold Arb. 30: 39-63, 1949.

Axis of the inflorescence puberulous.

Leaves elliptic or lance-elliptic (broadest at the middle).

Mature leaves densely reticulate on both surfaces, margins remotely crenulate-serrulate; follicles practically glabrous (here and there are very scattered minute hairs).....
.....*S. novoguineense*.

Mature leaves obscurely reticulate on the upper surface only, margins entire; follicles sparsely but evenly puberulous.....
.....*S. idenburgense*.

Leaves lanceolate (broadest below the middle).....
.....*S. lanceolatum*.

Spiraeanthemum Kajewskii Perry, spec. nov.

Arbor usque 20 m. alta; ramulis atro-fuscis, novellis minute pubescentibus, compressis, nodis paulo incrassatis, cito glabratis; stipulis oblongis, 9 mm. longis, 3 mm. latis, obtusis, extus appresse pubescentibus; foliis chartaceis, ellipticis, 5–12 cm. longis, 2.5–5 cm. latis, utrinque angustatis, apice acutiusculis vel breviter et obtuse acuminatis, basi cuneatis, margine denticulatis, supra olivaceis subtus pallidioribus, utrinque glabris (subtus costa venisque hinc inde pilis obsitis), venis primariis utrinsecus ± 13 oblique patentibus prope marginem furcatis utrinque perspicuis, venulis \pm dense reticulatis utrinque manifestis; petiolo 0.8–2 cm. longo; inflorescentiis ± 7.5 cm. longis, axi et ramulis puberulis, multifloris; pedicellis 1 mm. longis; calyce 1.5 mm. longo, lobis 4 vel 5, oblongis, 1 mm. longis, acutiusculis; staminibus longioribus 1 mm. alternis 0.7 mm. longis, antheris minutis; disci squamis 4 vel 5, bilobatis apice truncatis vel paulo retusis, 0.4 mm. longis, 0.5 mm. latis; carpellis 4 vel 5, ovariis 0.7 mm. longis, pubescentibus, 2-ovulatis, stylis 0.4–0.5 mm. longis, vix 0.2 mm. crassis, stigmatibus capitatis; folliculis 3.5 mm. longis, 0.7 mm. diam., appresse pubescentibus.

SOLOMON ISLANDS: Bougainville: Kupei Gold Field, *Kajewski 1700* (TYPE), April 1930, alt. 1000 m., rain-forest (tall tree up to 20 m. high); Koniguru, Buin, *Kajewski 2082*, Aug. 1930, alt. 950 m., rain-forest (tree up to 20 m. high; flowers white. Wood used by natives for building houses). Guadalcanal: Uulolo, Tutuve Mt., *Kajewski 2533*, April 1931, alt. 1200 m., rain forest (tree 8 or 9 m. high; flowers minute, green; fruits small, mostly in fours).

Kajewski 2082 is taken from new growth. It is much more pubescent than the type, the terminal bud is villous as well as two very young leaves subtending it. Also, the leaves are somewhat larger (10–15 \times 5.5–8.5 cm.) and the midrib and veins of both surfaces are pubescent with fine hairs, the lower surface more densely so. Between the veins the lamina is glabrate. Further, the axis and branches of the inflorescence are much more hairy than those of the type. These collections appear nevertheless to be conspecific.

Spiraeanthemum Kajewskii is more like some Polynesian species than those of New Guinea. It should be compared with *S. Macgillivrayi* Seem. from Aneityum, which is only very briefly characterized and of which we have no specimen. It suggests *S. samoense* A. Gray, but this last species has leaves rounded at the base, stamens as long as the calyx or longer, and the parts of the disk as many as the stamens.

Spiraeanthemum Pulleanum Schlechter in Bot. Jahrb. 52: 140. 1914, in Nova Guin. 12: 491, t. 191. 1917; Kaneh. & Hatus. in Bot. Mag. (Tokyo) 56: 111. 1942.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, Brass & Versteegh 11923, Brass 12017, 12136, Jan. 1939, alt. 1780 and 1800 m., common in mossy forest (subsidiary tree 15–18 m. high; flowers light yellow; leaves stiff, convex).

I am unable to distinguish these collections either from this species (as defined in the original description) or from Kanehira's collection taken in the type locality, except that the leaves are not, or are only very slightly, bullate. This characteristic appears to be variable within the species.

Spiraeanthemum reticulatum Schlechter in Bot. Jahrb. 52: 140. 1914.

NETHERLANDS NEW GUINEA: 18 km. southwest of Bernhard Camp, Idenburg River, Brass 12693, Feb. 1939, alt. 2150 m., mossy forest (tree attaining a height of 25 m. and stem diameter of 30 cm.).

This collection agrees fairly well with the original description except that it is difficult to decide what Schlechter considered a short petiole. In this specimen the largest leaf is 6.5 cm. long (including a petiole 1 cm.) and 3.2 cm. wide. The smaller leaves have petioles about 5 mm. long not including the shortly decurrent (1–3 mm.) base of the lamina. The lamina tends to be slightly convex between the impressed primary nerves, and the margins are somewhat revolute. The axis and branchlets of the inflorescence are more hirtellous or subtomentose than villous, the hairs are fairly short and crinkly but not matted. The carpels are mostly puberulous in this profusely fruiting specimen. The seeds are about 2.5 mm. long.

Spiraeanthemum idenburgense Perry, spec. nov.

Arbor 16 m. alta, 35 cm. diam.; ramulis atro-fuscis, novellis puberulis, nodis incrassatis; foliis coriaceis, oppositis et ternatis, ellipticis, (2.3–) 5.5–11 cm. longis, (1.5–) 2.5–6 cm. latis, utrinque angustatis, apice obtusis, basi cuneatis, margine integris, utrinque glabris, supra olivaceis, subtus pallidioribus, venis primariis utrinsecus 6–8 supra impressis subtus prominulis, oblique patentibus prope marginem arcuatis, venulis dense reticulatis supra vix distinctis, subtus perspicuis; petiolo (0.3–) 1–1.5 cm. longo; inflorescentiis 5.5–13 cm. longis, pedunculo 0.5–6 cm. longo, axi et ramulis puberulis; calyce 2 mm. longo, glabro, lobis 4 vel 5, ovatis subacutis, 1.3 mm. longis, 1 mm. latis; filamentis 1.2 mm. longis, antheris ellipsoideis, 0.4 mm. longis, leviter retusis; disci squamis oblongis vel quadratis 0.6 mm. longis; carpellis saepissime 3, ovariis pubescentibus,

0.7 mm. longis, 2-ovulatis; stylis 1.1 mm. longis; folliculis 5 mm. longis \pm puberulis; seminibus 2.3 mm. longis.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 11938* (TYPE), Jan. 1939, alt. 1680 m., frequent on forested slopes (tree 16 m. high, 35 cm. diameter; flowers light yellow; fruit yellow-green).

This species shows much variability in the size of the leaves and the length of the infructescences. The mature leaves are more firmly coriaceous than in any other species at hand. When the leaves are ternate, often one leaflet is much smaller than the others.

Spiraeanthemum novoguineense Perry, spec. nov.

Arbor \pm 15 m. alta, 20 cm. diam.; ramulis atro-cinereis, novellis puberulis, nodis incrassatis; foliis coriaceis oppositis, interdum ternatis, ellipticis utrinque angustatis, basi cuneatis, apice anguste obtusis vel subrotundatis, interdum breviter et obtuse acuminatis, margine remote crenulato-serrulatis vel integris, utrinque glabris dense reticulatis, venis primariis utrinsecus 5-7, patenti-ascendentibus prope marginem arcuatis, supra inconspicuis, subtus prominulis, lamina 2.5-8.5 cm. longa, 1.3-4.2 cm. lata, in petiolo 2-5 mm. decurrente; petiolo 3-10 mm. longo, supra \pm applanato, interdum puberulo; infructescentiis usque 9 cm. longis, axi et ramulis \pm puberulis; pedicellis vix 1.5 mm. longis; calyce vix 2 mm. longo, glabro, lobis 4, 1.3 mm. longis, 0.9-1 mm. latis, acutiusculis vel obtusiusculis; filamentis 1.7-2 mm. longis, glabris; disci squamis 0.5-0.6 mm. longis, 0.2 mm. latis, oblongis vel paulo cuneatis vel interdum subquadratis; carpellis 3 vel 4, immaturis 1.8 mm. longis, sparsim pilosulis 2- or 3-ovulatis, maturis 4 mm. longis, hinc inde pilis minutis obsitis; stylis subulatis 1.2 mm. longis; seminibus 2 mm. longis.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass 11860* (TYPE), Jan. 1939, alt. 1800 m., mossy forest (abundant subsidiary tree \pm 15 m. high, 20 cm. diameter; fruits green).

NORTHEAST NEW GUINEA: vicinity of Samanzing, *Clemens 9476, 9584*, Jan., Feb. 1939, alt. \pm 2400 m.

In these collections the leaves are occasionally ternate. At a glance the reticulate upper surface of the leaf may be seen. The species differs from *S. parvifolium* Schltr. in having somewhat larger and flat coriaceous leaves. It may be distinguished from *S. reticulatum* Schltr. by the larger leaves, the shorter infructescence (not more than half as long again as the leaves), and the puberulous axis and branchlets. In *S. reticulatum* Schltr. the inflorescence is two or three times as long as the leaves, and the peduncle is villous.

Spiraeanthemum lanceolatum Perry, spec. nov.

Arbor glabra; ramulis fuscis, nodis incrassatis, alabastris parvis, breviter tomentosis; foliis coriaceis, oppositis vel interdum ternatis, lanceolatis, 6.5-13 cm. longis, 2.4-4.8 cm. latis, basi cuneatis, apice late et obtuse acuminatis, acumine 6-12 mm. longo, margine integris, utrinque glabris,

venis primariis utrinsecus ± 7 , patenti-ascendentibus prope marginem arcuatis, supra impressis subtus prominulis, venulis dense reticulatis supra inconspicuis subtus perspicuis; petiolo (incl. lamina 3–7 mm. decurrente) 0.5–1.3 cm. longo, canaliculato; inflorescentiis 3–5 cm. longis, axi et ramulis puberulis; pedicellis 1–1.8 mm. longis; calyce 1.7 mm. longo, lobis 4–6, 1.2 mm. longis, 0.6–0.7 mm. latis, oblongis vel oblongo-ellipticis, acutiusculis; filamentis 1.5–2 mm. longis, antheris minutis, late ellipsoideis minute apiculatis; disci squamis 4–6, bilobis (interdum bipartitis), 0.2–0.3 mm. longis truncatis vel paulo retusis; carpellis 2–4, ovariis 0.5 mm. longis, sparsim pubescentibus, 4-ovulatis; stylis 1.5–2 mm. longis.

NETHERLANDS NEW GUINEA: 2 km. southwest of Bernhard Camp, Idenburg River, *Brass 13615* (TYPE), Mar. 1939, alt. 700 m., rain-forest (substage tree; flowers white).

This species is readily distinguished from *S. novoguineense* by the lanceolate entire leaves with a smooth upper surface. The latter character is also found in *S. idenburgense*, but the leaves of the latter are elliptic and somewhat more firmly coriaceous. *Spiraeanthemum idenburgense* also has a little larger flowers with shorter filaments and styles but larger disk scales than *S. lanceolatum*.

OPOCUNONIA Schlechter

In our material there are at least four species of this genus, and five different collections in fruit. The fruits are bivalvate capsules instead of drupes having a fleshy exocarp as indicated in the original description. The seeds are winged at both ends ± 3 mm. long (including the wings) and about 0.5 mm. broad. With only the original description of the genus *Stollaea* Schltr. and the figure of the type-species *S. papuana* Schltr. for comparison, I am unable to find any generic characters to separate that genus from *Opocunonia* Schltr. However, since we have no material which matches *S. papuana* Schltr., I merely mention this in passing, and leave the actual reduction to the monographer, who should have access to isotype material, if possible.

Opocunonia kaniensis Schlechter in Bot. Jahrb. 52: 160, fig. 8, A-G. 1914.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habema, *Brass & Versteegh 11120, Brass 11478*, Nov. 1938, alt. ± 2200 and 2300 m., frequent in the forests (large canopy tree; bark reddish brown, warted; wood soft, flowers white); 6 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 12563*, Feb. 1939, alt. 1230 m., common in primary forest (tree 32 m. high, 59 cm. diam.; bark gray; sapwood orange, heartwood dark red; flowers white; fruits green).

NORTHEAST NEW GUINEA: Ogeramang, *Clemens 5022*, Jan. 1937, alt. 1770 m.; Samanzing, *Clemens 8967, 9297*, Oct., Nov. 1938, alt. 1600–1800 m., mountain bush (tree 15 in. to 3 ft. diam.; flower buds pale green; flowers white); Matap, *Clemens 11102*, Feb. 1940, alt. 1500–1800 m.

In these specimens the base of the leaflets is often rounded, then very shortly cuneate; the ovary is puberulous rather than glabrous; the capsule is 6–8 mm. long and about 3 mm. diameter. The stipules vary in size (0.7–2.5 cm. long, 1–3 cm. broad) and are somewhat rectangular in outline, with truncate or broadly and shallowly retuse apex. The rounded sides contract into a broad short base at the attachment to the stem. From this base the two main veins extend to the outer points of the apex like a very broad V.

Opocunonia Nymanii (K. Sch.) Schlechter in Bot. Jahrb. 52: 159. 1914.

Ackama Nymanii K. Sch. in K. Schum. & Lauterb. Nachtr. Fl. Deutsch. Schutzgeb. Südsee, 272. 1905.

NORTHEAST NEW GUINEA: Morobe District, Sattelberg, *Clemens 6654*, June 1937.

This collection, although fragmentary and with only young flower-buds, matches very closely the original description. At hand is another specimen collected below Boana in Aug. 1938, at approximately 750 m. alt., *Clemens 8704* (tall tree 2 ft. diam.); a few leaflets of this specimen are about the same size as those of *Clemens 6654*, but most of the leaflets are larger, the largest being 12.5 cm. long, 4 cm. broad and chartaceous; those of *Clemens 6654* are slightly firmer. The branches of the inflorescence are villous, even in the infructescence, those of the other specimen (of which we have only a fragment of the inflorescence) are only minutely puberulous. *Clemens 8704* has an inflorescence (young buds only) about 10 cm. long and an infructescence about the same length. The capsule (without the persistent style) is 5 mm. long and minutely appressed-pubescent.

Opocunonia papuana Kanehira & Hatusima in Bot. Mag. (Tokyo) 56: 108, fig. 4. 1942.

NETHERLANDS NEW GUINEA: Chaban, 30 km. inward from Nabire, *Kanehira & Hatusima 11756*, Feb. 1940, alt. 100 m., in dense rain-forest (tree 30 m. high); 15 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 11950*, Jan. 1939, alt. 1900 m., occasional in primary forest (tree 31 m. high, 43 cm. diam.; bark black; sapwood red-yellow, heartwood dark red; flowers white); 18 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 12501*, Feb. 1939, alt. about 2000 m., rare in primary forest (tree 43 m. high, 67 cm. diam.; bark black, rough; wood red-yellow; flowers white; ripe fruit brown); 6 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 12540, 13105*, Feb. 1939, alt. 1200 m., frequent or occasional in primary forest (tree 20–28 m. high, 43–53 cm. diam.; bark brown, scaly in one, in the other gray, rough; flowers white); 4 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13117, Brass 13309, 13630*, March 1939, alt. 850 and 900 m., plentiful in rain forest canopy and common subsidiary tree in *Agathis* forest (tree 35 or 25 m. high; flowers white).

NORTHEAST NEW GUINEA: Sambanga, *Clemens 6957*, Sept. 1937, alt. 1500–1800 m. (tall tree 18 in. diam.).

There is some variation in the size of the flowers of the collections cited above. The length of the calyx-lobes varies from 1.4–2 mm. long, and the pedicels from 1–2 mm. long. The leaves also vary considerably in size, but all seem to be of similar texture and venation; in some specimens the lower surface of the leaf is sparsely and minutely pubescent and small domatia occur in the axils between the primary veins and the midrib. The capsule of this species is 4–5 mm. long (not including the style), with scattered minute hairs on the outside. The seeds are \pm 3 mm. long.

Possibly the following collection belongs here: 2 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13505*, Apr. 1939, alt. 750 m. The leaves of this specimen are a little coarser than in most of the collections cited above, and the inflorescence (flower buds very young) in one specimen measures 20 \times 25 cm.

Opocunonia trifoliolata Schlechter in Bot. Jahrb. 52: 161. 1914.

BRITISH NEW GUINEA: Central Division, Mafulu, *Brass 5247*, Sept.-Nov. 1933, alt. 1250 m., old secondary forest (tree 8 m. high, with shining smooth leaves and white flowers).

The above cited specimen is probably only a pubescent form of this species. On the lower surface of the leaves there are minute scattered hairs, the base of the lateral leaflets is rounded, while that of the terminal ones is usually cuneate. The leaves are both 3- and 5-foliolate. The axis of the inflorescence is densely pubescent, as are the pedicels, the lower part of the calyx, and the ovary. The filaments are 6 and 8 mm. long.

SPIRAEOPSIS Miquel

In our herbarium the genus *Spiraeopsis* Miq. is represented by thirteen specimens, one from the Celebes, two from Manado, and ten from the Philippines. The genus was originally described as dioecious by Miquel, later emended to monoecious by Koorders in his *Suppl. Fl. Celebes 1: 22. 1918.* Since then B. L. Burtt, in *Kew Bull. 1936: 462. 1936,* in a discussion of *S. celebica* Miq., has indicated that all herbarium specimens seen have been entirely male or entirely female. I have dissected several flowers, all perfect, i.e., possessing both pollen and ovules, and in appearance they are like *figs. 11, 12, 13,* of Koorders' plates *7a, 7b,* which in the legend are designated as "masc." Could it be that the fugacious character of the petals and stamens gives rise to the impression of a pistillate inflorescence?

The genus *Betchea* Schlechter, hitherto regarded as endemic in New Guinea, seems to differ only in having two to five carpels instead of two, rarely three. In this study it is treated as a synonym of *Spiraeopsis*.

KEY TO THE SPECIES

Flowers with mostly 2 (occasionally 3)-loculed ovary.

Lower surface of the leaves glabrous (but conspersely glandular) except midrib and veins.....*S. glabrescens.*

Lower surface of the leaves not glabrous, or if so, leaves 5–9-foliolate.

- Lower surface of the leaves tomentulose, or if glabrous, leaves 5-9-foliolate.....*S. celebica* sensu lato.
- Lower surface of the leaves densely tomentose or pilose-tomentose.
Leaves 3-foliolate; capsule 5-6 mm. long, tomentose; seeds papillose.....*S. Brassii*.
Leaves 5-foliolate; capsule 3-4 mm. long, shortly villous-tomentose.....*S. pubescens*.
- Flowers with 3-5-loculed ovary.
- Flowers with mostly 3 (occasionally 4)-loculed ovary.
Leaves 3-foliolate.....*S. fulva*.
Leaves 5-11-foliolate.
Leaflets sessile.....*S. canariifolia*.
Leaflets petiolulate.
Lower surface of leaflets rufous-tomentose.....*S. rufa*.
Lower surface of leaflets stellate-puberulous to almost glabrous and glandular.
Leaflets small, 2.5-7 × 1.3-3 cm.....*S. Clemensiae*.
Leaflets larger, 8-12 × 3.5-5 cm.
Leaflets 7-11, gradually acuminate...*S. papuana*.
Leaflets 5, acutish.....*S. myriantha*.
- Flowers with 4- or 5-loculed ovary.
Flowers with 4-loculed ovary; under surface of leaves glabrous and glandulose.....*S. pometiiformis*.
Flowers with 5 (occasionally 4)-loculed ovary; under surface of leaves densely tomentulose.....*S. aglaiaeformis*.

Spiraeopsis celebica (Bl.) Miq. Fl. Ind. Bot. 1(1): 719. 1856; B. L. Burtt in Kew Bull. 1936: 462. 1936; sensu lat.

Cunonia celebica Bl. Bijdr. 868. 1826.

SOLOMON ISLANDS: Bougainville: Kupei Gold Field, *Kajewski* 1715, Apr. 1930, alt. 1200 m., rain forest (tree up to 30 m. high; fruit brown when ripe splitting into two parts, length without style 5 mm., diam. 2.5 mm.); Buin, Koniguru, *Kajewski* 2113, Aug. 1930, alt. 900 m., rain forest (tree up to 25 m. high; flowers with green sepals, very long stamens, and a faint sweet odor). Ysabel: Tiratona, *Brass* 3214, Nov. 1932, alt. 600 m., common in mountain rain forests (tall tree with thin gray bark; fruit brown).

There is considerable variation in the pubescence of these three collections as is also true of the other material of this species at hand. But until such time as a critical examination of the species can be made, it seems preferable to place the material here.

Spiraeopsis aglaiaeformis (Kaneh. & Hatus.) Perry, comb. nov.

Betchea aglaiaeformis Kanehira & Hatusima in Bot. Mag. (Tokyo) 56: 106, fig. 2. 1942.

NETHERLANDS NEW GUINEA: Angi, Arfak Mts., *Kanehira & Hatusima* 13907 (ISOTYPE), Apr. 1940, alt. 1900 m., in forest along Iray River to Lake Gita (tree 15 m. high, 20 cm. diam.); 9 km. northeast of Lake Habbema, *Brass & Versteegh* 10476, Oct. 1938, alt. ± 2700 m., rare in primary forest (tree 34 m. high, 30 cm. diam.; wood rose; bark gray, fairly smooth; flowers and fruits yellow); Bele River, 18 km. northeast of Lake Habbema,

Brass & Versteegh 11138, Nov. 1938, alt. 2350 m., frequent in primary forest (tree 31 m. high, 42 cm. diam.; bark gray, rough; wood rose; flowers brown); 15 km. southwest of Bernhard Camp, Idenburg River, *Brass 12231*, Jan. 1939, alt. 1700 m., in rain forest ravine (tree 5 m. high, 10 cm. diam.; flowers white).

NORTHEAST NEW GUINEA: Sambanga, *Clemens 6835*, Aug. 1937, alt. 1500–1800 m., margin of mountain forest (frequent big tree).

Among the fruits I have found three, four and five locules but mostly the last mentioned. The leaves are 3-, 5- or 7-foliolate, with the 3-foliolate opposite the 5-foliolate ones.

***Spiraeopsis rufa* (Schlechter) Perry, comb. nov.**

Betchea rufa Schlechter in Bot. Jahrb. **52**: 148, f. 4, A-G. 1914.

NORTHEAST NEW GUINEA: Yunzaing, *Clemens 3872*, Aug. 1936, alt. 1350 m.; Quembung, *Clemens 3195*, June 1936, alt. 750 m., forest hills (tall tree 10–12 in. diam.; flower purplish, stamens purple-red, anthers pale yellow; fruits brown, 3-fid, purple inside); Sattelberg, *Clemens 2216*, Apr. 1936, alt. \pm 1000 m., in forest.

In flowers and pubescence these three specimens match *Schlechter 17086*, one of the numbers cited in the original description. The capsules are 3 mm. long, valves \pm 1 mm. broad; seeds including the wings 1 mm. long.

***Spiraeopsis fulva* (Schlechter) Perry, comb. nov.**

Betchea fulva Schlechter in Bot. Jahrb. **52**: 148. 1914.

We have no specimen which matches this species, but it should be compared with *S. glabrescens* Perry.

***Spiraeopsis Brassii* Perry, spec. nov.**

Arbor; ramulis dense subferrugineo-tomentosis deinde glabratis, crassiusculis, 5 mm. diam.; stipulis parvis, 5–7 mm. longis, 7–8 mm. latis, subreniformibus vel subrotundis, utrinque tomentosis; foliis trifoliolatis, margine plerumque crenato-dentato interdum fere subintegris, supra rugosis, novellis tomentosis cito glabratis, subtus dense tomentosis vel breviter sublanatis, foliolis ellipticis terminali interdum obovato-elliptico, 7–11 cm. longo, 4–8.5 cm. lato, apice subacuto vel obtuso vel interdum breviter et obtuse acuminato, basi cuneato vel rotundato, petiolulo 0.5–1.8 cm. longo, lateralibus ellipticis, saepe minoribus, 3–7 cm. longis, 2.3–5.4 cm. latis, apice obtusiusculis, basi plerumque inaequaliter rotundatis interdum cuneatis, subsessilibus vel sessilibus, venis primariis utrinsecus 8–12 patentibus ascendentibus prope marginem furcatis \pm anastomosantibus, supra impressis subtus prominulis, venulis supra perspicuis; petiolo 1.5–3 cm. longo, dense tomentoso; inflorescentiis tomentosis, 15 cm. vel. ultra, multifloris; pedicello 1–1.5 mm. longo; floribus 4–5-meris; calycis tubo 1 mm. longo, lobis 1–1.5 mm. longis; petalis circiter 1.5 mm. longis, obovato-oblongis; filamentis petalis aequalibus, antheris 0.5 mm. longis latisque apiculatis; disco 10-lobulato; stylis 2, circiter 1 mm. longis; ovario dense

tomentoso 2-loculari, pluri-ovulatis; capsula 5–6 mm. longa, seminibus 2–2.5 mm. longis (alis inclusis) minute papillosis.

NORTHEAST NEW GUINEA: Sarawaket, *Clemens 6050* (in fruit), *7535a* (leaves and very young flower buds), Apr., Nov. 1937, alt. 2400–2700 and 2100 m.; vicinity of Samanzing, *Clemens 9511*, Jan. 1939, alt. 2100–2400 m. (tree with brown fruit).

BRITISH NEW GUINEA: Central Division, Mt. Tafa, *Brass 4852* (TYPE), May-Sept. 1933, alt. 2700 m., on cleared summit (bushy small tree 4 m.; underside of leaves densely brown pubescent); same locality, *Brass 5024*, alt. 2400 m., very common in valley forests (tree up to about 30 m. high; irregular scant-foliaged crown; branchlets stiff; profusion of small green flowers; fruit not seen).

In the last specimen cited there is only one old leaf (not as rugose on the upper surface as those of the other specimens), the rest are immature, but the lateral leaflets are sessile and the margin is inconspicuously serrate-dentate; the inflorescence is broken, but the main axis is 26.5 cm. long, the branches on one side (the others are broken off) are 10–12 cm. long, the pubescence of the whole plant is definitely tomentose. In the other specimens the lower surface of the leaves is almost lanate or villous-tomentose, the upper noticeably rugose. Until more material is at hand it seems best to accept all as one species. No other species of the genus which I have seen has papillose seeds or as thick pubescence.

Spiraeopsis pubescens Perry, spec. nov.

Probabiliter arbor; ramulis tomentosis crassiusculis, \pm 5 mm. diam.; stipulis non visis; foliis 5-foliolatis, coriaceis, inconspicue serratis, supra rugulosis stellato-pilosulis, subtus brunnescentibus dense stellato-pilosis vel piloso-tomentosis, foliolis 7–17 cm. longis, 4–9 cm. latis, ellipticis vel ovato-ellipticis, terminali basi cuneato, petiolulo 0.7–2.5 cm. longo, lateralibus basi rotundatis vel rotundato-cuneatis, apice brevissime et obtuse acuminatis vel acutiusculis, venis primariis utrinsecus 12–16 oblique patentibus prope marginem \pm anastomosantibus, supra impressis subtus prominulis, venulis supra distincte manifestis, petiolulis 3–6 mm. longis; petiolo 3–4 cm. longo et rhachide tomentosis; inflorescentiis multifloris, juvenilibus \pm 20 cm. longis, dense tomentosis, in fructu 28 cm. longis, ramis inferioribus 15 cm. longis; pedicellis 1 mm. longis; floribus 5-meris; calyce 1.5 mm. longo (incl. lobis vix 1 mm.); petalis (siccis) 1 mm. longis, spathulatis; filamentis 2 mm. longis, antheris ovatis apiculatis; disco 5-lobato; ovario dense subvillosito-tomentoso, stylis 2 vix 1.5 mm. longis; capsula 3–4 mm. longa, \pm 2 mm. lata, seminibus vix 1.5 mm. longis, minute rugulosis vel \pm reticulatis.

NORTHEAST NEW GUINEA: Yoangen, *Clemens 3429* (TYPE), June 1936, alt. 1500–1800 m. (specimen with infructescence and one separate leaf); Ogeramngang, *Clemens 4802*, Dec. 1936, alt. about 1800 m. (specimen with very young inflorescence, branches not yet elongated).

The pubescence of this species is of longer hairs and more dense than that of *S. rufa* (Schltr.) Perry, and practically as long as that of *S. Brassii*

described above. In fact, the latter differs only in the trifoliolate leaves (but some species have 3-7-foliolate leaves), the slightly larger capsules usually with shorter stellate tomentum, and minutely papillose seeds.

Spiraeopsis glabrescens Perry, spec. nov.

Arbor; ramulis minute stellato-puberulis fuscis; stipulis circiter 1 cm. longis, 1.5 cm. latis, late rotundatis, basi subtruncatis deinde 3-5 mm. stipitatis, margine \pm dentatis utrinque stellato-puberulis; foliis 3-5-foliolatis, novellis supra consperse stellatis subtus dense glandulosis, maturis subcoriaceis margine serrulatis, supra fere glabris, costa nervisque \pm puberulis, subtus consperse glandulosis, costa nervisque \pm dense stellato-puberulis, foliolis ellipticis vel obovato-ellipticis, 8-16 cm. longis, 4.5-8 cm. latis, terminali basi cuneato, petiolulo 0.5-1.5 cm. longo, lateralibus basi inaequaliter rotundato-cuneatis, apice subabrupte et breviter acuminatis, venis primariis utrinsecus 11-15 oblique ascendentibus prope marginem \pm furcatis arcuatim anastomosantibus, supra impressis subtus prominulis, venulis subtus manifestis, petiolulis \pm 4 mm. longis; petiolo 2-5 cm. longo et rhachide consperse glandulosis et minute stellato-puberulis, infructescentiis 17 cm. vel ultra, axi et ramulis dense tomentellis; pedicellis vix 1 mm. longis; floribus 5-meris; calycis lobis vix 1 mm. longis, acutis; petalis et staminibus non visis; disco 5-lobato, lobis bilobulatis; capsula dense glandulosa et tomentella, 4 mm. longa (incl. stylis 1 mm.), 2(-3)-valvata; seminibus (incl. alis) 1 mm. longis.

NORTHEAST NEW GUINEA: Sambanga, *Clemens 7052A* (TYPE), Sept. 1937, alt. 1500-1800 m. (an infructescence, a new shoot and a separate 5-foliolate leaf); Sarawaket trail above Kaile forest, *Clemens 4966*, Jan. 1937, alt. 1650-1800 m. (a medium-sized felled tree in a heap of debris).

The nearest approach to this species seems to be *S. fulva* (Schltr.) Perry according to the description of the latter. Both have 3-foliolate leaves, very short pubescence, and very small flowers on very short pedicels. However, in *S. fulva* (Schltr.) Perry the lower surface of the leaves is densely pubescent, the ovary stellate-villous and 3-loculed.

Spiraeopsis Clemensiae Perry, spec. nov.

Arbuscula \pm 12 cm. diam.; ramulis gracilibus, 3-4 mm. diam., brunnescentibus, glandulosis et minute stellato-puberulis; stipulis rotundatis, 5 mm. longis latisque tomentellis; foliis 5-7-foliolatis, 10-14 cm. longis, novellis dense glandulosis et stellato-tomentosis cito glabratis, maturis coriaceis serratis, supra pallide olivaceis fere glabris, costa \pm puberula, subtus brunnescentibus, costa et venis minute stellato-puberulis ceterum glabris et consperse glandulosis, foliolis oblongis, 2.5-7 cm. longis, 1.3-3 cm. latis, apice breviter acuminatis vel acutiusculis vel obtusis, basi obtusis vel cuneatis, venis primariis utrinsecus \pm 11 patenti-ascendentibus, arcuatis, supra impressis subtus conspicuis, terminalis petiolulo \pm 1.5 cm. longo, lateralibus basi leviter inaequalibus, petiolulis 3-7 mm. longis; petiolo vix 1.5-2.5 cm. longo et rhachide stellato-puberulis; inflorescentiis multifloris, 14 (in fructu 24) cm. longis, axi et ramulis dense stellato-tomentellis; pedicellis 1 mm. longis; calyce minute stellato-puberulo, tubo

0.5 mm. et lobis 1 mm. longis, 0.8 mm. latis, acutis; petalis et staminibus non visis; disco 10-lobato; ovario circiter 1 mm. longo tomentello, stylis 3, vix 1 mm. longis; capsula circiter 4 mm. longa (stylis inclusis), 3-valvata, seminibus \pm 1.5 mm. longis (alis inclusis).

NORTHEAST NEW GUINEA: Morobe District, *Clemens 6049*, Mar. 1937, alt. 2400–2700 m. (a fruiting specimen without further data); Sattelberg, Masak R.R., *Clemens 7568* (TYPE), Nov. 1937, alt. 1800–2400 m., in mountain forest (treelet 5 in. diam.).

***Spiraeopsis myriantha* (Schltr.) Perry, comb. nov.**

Betchea myriantha Schlechter in Bot. Jahrb. **52**: 150. 1914.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habema, *Brass & Versteegh 11137*, Nov. 1938, alt. \pm 2350 m., common in old secondary forest (tree 22 m. high, 33 cm. diam.; bark brown-green, smooth; wood white; flower-buds red).

This specimen for the most part has very immature flower buds. The leaves fall within the measure of those given for this species and are 5-foliolate, but they are almost glabrous on the lower surface. The inflorescence is about 20 cm. long. The three flowers dissected had 4-loculed ovaries, whereas the original description points to 3-loculed ones. When there is opportunity to examine the isotype, this collection may be found to belong elsewhere.

***Spiraeopsis papuana* (Pulle) Perry, comb. nov.; vel aff.**

Ackama papuana Pulle in Nova Guin. **8**: 645. 1912.

Betchea papuana (Pulle) Schlechter in Bot. Jahrb. **52**: 150. 1914, in Nova Guin. **12**: 491. 1917.

BRITISH NEW GUINEA: Central Division, Ononge Road, Dieni, *Brass 3957*, May 1933, alt. 500 m., rain forest (slender sparsely foliated tree 10 m. high; indumentum brown; upper surface of leaves shiny; inflorescence reddish brown).

This collection differs in several respects from the original description, but the description of the leaflets is within the limits of the specimen at hand; however, this leaf is 5-(rather than 3-) jugate. The leaflets vary in size, one measures 16 \times 5 cm., and the apex is long-acuminate (2 cm.). The inflorescence is 50 cm. long (including a peduncle of 14 cm. below the lowest branches), but in other collections the size of the inflorescence varies considerably; the number of styles is usually 3, although sometimes only 2. Another difference which should be pointed out is that Professor Pulle does not mention the stellate pubescence of the inflorescence, which is a key character of the genus. In conjunction with this species *S. pometiiformis* Ridl. ought to be examined.

CERATOPETALUM Smith

***Ceratopetalum tetrapterum* Mattfeld in Jour. Arnold Arb. **20**: 432. 1939; Kanehira & Hatusima in Bot. Mag. (Tokyo) **56**: 108. 1942.**

NETHERLANDS NEW GUINEA: 6 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 12516*, Feb. 1939, alt. 1200 m. (occasional

tree 30 m. high, 58 cm. diam.; flowers white; fruits dark red); 4 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13162*, Mar. 1939, alt. 800 m., occasional, slopes of primary rain forest (tree 32 m. high, 43 cm. diam.; sap red; flowers white); 2 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13183*, alt. 750 m., frequent on slopes in primary rain forest (tree 20 m.; fruits dark red); Boemi, Nabire, *Kanehira & Hatusima 12801*, Mar. 1940, alt. 300 m., in *Agathis* forest.

NORTHEAST NEW GUINEA: Wareo, *Clemens 1618*, Jan. 1936, alt. \pm 600 m.

BRITISH NEW GUINEA: Oroville Camp, Fly River (30 miles above D'Albertis Junction), *Brass 7405* (ISOTYPE).

Although the leaves show considerable variation in size and may be oblong or obovate-oblong, acute, obtuse, or obtusely acuminate, all appear to belong to one species. The flowers are rather small and the calyx-tube densely hirtellous; calyx-lobes four, outside sparsely hirtellous, within densely pubescent except at the very base, ovate, 2.3 mm. long, 1.5 mm. broad, acutish; petals lacking; filaments 1.3 mm. long, the anthers broadly ovate-elliptic, 0.5 mm. long and broad, the apicula short, not recurved; disk slightly lobed, glabrous; ovary densely pubescent; styles glabrous.

Ceratopetalum succirubrum C. T. White of North Queensland is probably the nearest related species, but the leaves are smaller and lanceolate, and the anthers have a fairly prominent apiculus.

SCHIZOMERIA D. Don

The specific characters of this genus appear to be highly variable and difficult to define. Some fruits may be ellipsoid or broadly so in the younger forms and apparently become practically globose at maturity. The pubescence of the inflorescence is variable. The petals are fugacious and often irregular. With only the descriptions of *S. floribunda* Schltr. and *S. Pulleana* O. C. Schm., and very poor material of *S. serrata* Hochr., I have been unable to separate some of the named species at hand satisfactorily from them. For this reason, although these three species have priority, they are not included in the key.

KEY TO THE SPECIES

- Leaves ovate, subtruncate at base, small (less than 5 cm. long), on very short petioles.....*S. parvifolia*.
 Leaves, if ovate, not subtruncate at base, mostly larger, with longer petioles.
 Ovary densely tomentulose or tomentose.
 Inflorescences not quickly becoming glabrate; outside of flower tomentulose.
 Petioles 2-3.5 cm. long; leaves crenulate-serrulate; flowers short-pedicellate.....*S. Clemensiae*.
 Petioles 0.5-1.5 cm. long; leaves crenate-serrate; flowers sessile.....*S. Versteeghii*.
 Inflorescences quickly becoming glabrate; outside of flowers usually pubescent on the pedicel and the calyx-tube, the calyx-lobes glabrous or with scattered hairs.

- Leaves oblong-elliptic or ovate-elliptic to lance-elliptic, the primary veins close (5–9 mm. apart) but widely spreading, the lower ones subhorizontal.
 Fruit oblong-ovoid; leaves not glandular on the lower surface.....*S. orthophlebia*.
 Fruit globose; leaves minutely glandular on the lower surface.....*S. novoguineensis*.
 Leaves elliptic; the primary veins rather remote (1–2 cm. apart), spreading-ascending.....*S. Whitei*.
 Ovary pilose to glabrous (if somewhat tomentulose, flowers very small, not more than 4 mm. across).
 Leaves glandular on the lower surface, glands visible without a lens; flowers 4-merous.....*S. adenophylla*.
 Leaves not glandular on the lower surface, or if glandular, glands very minute and not visible without a lens; flowers mostly 5–6-merous.
 Leaves lanceolate or oblong-lanceolate, gradually acuminate.....*S. gorumensis*.
 Leaves elliptic, or if lanceolate only acute or abruptly acuminate.
 Fruit ellipsoid; flowers practically glabrous (ovary with few scattered hairs).....*S. katastega*.
 Fruit globose or subglobose.
 Leaves coriaceous or thinly coriaceous; ovary \pm densely pilose; flowers small (calyx lobes 1.5–2 mm. long).....*S. Brassii*.
 Leaves firmly coriaceous; ovary entirely glabrous; flowers larger (calyx lobes 2.5–3 mm. long).....*S. ilicina*.

***Schizomeria parvifolia* Perry, spec. nov.**

Arbor 13–14 m. alta; ramulis brunneo-ferrugineis, glabris; stipulis oblongis, subtruncatis, 7 mm. longis, 2 mm. latis; foliis valde coriaceis 3–4.5 cm. longis, 1.8–3 cm. latis, ovatis, obtusis, basi subtruncatis, margine crenulato-serrulatis, supra nitidis, pallide olivaceis, subtus olivaceis, dense reticulatis, venis primariis utrinsecus 10–12 supra interdum paululo impressis, subtus non elevatis, oblique patentibus prope marginem arcuatis et \pm furcatis; petiolo 2–5 mm. longo, 2 mm. lato, brunnescente; infructescentiae axi 2.5 cm. longo, glabro; fructibus ovoideis, 2.4 cm. longis, 1.8 cm. crassis.

BRITISH NEW GUINEA: Central Division, Wharton Range, Murray Pass, *Brass 4576* (TYPE), June–Sept. 1933, alt. 2840 m., common through forests (straight boled tree up to 13–14 m. with compact, densely foliated crown of stiff erect branches; reddish brown fruit).

In foliar characters this species is very distinct from the rest at hand. The small ovate leaves on very short petioles are pale greenish yellow with shining upper surface, under a lens very smooth except for a few slightly impressed lines marking some of the primary veins, yet if examined without a lens the primary veins may be easily counted. On the lower

surface the venation is the same color, but the small and shallow depressions between the veinlets (fairly coarse in this species) are slightly darker.

Schizomeria adenophylla Perry, spec. nov.

Arbor parva, 2–3 m. alta; ramulis cinereis, glabris; alabastris terminalibus vernicosis; stipulis oblongis, \pm 4 mm. longis 1.5–2 mm. latis, obtusis, glabris; foliis tenuiter coriaceis, lanceolate-ellipticis vel ellipticis, 3.5–6 cm. longis, 2–3 cm. latis, apice acutiusculis vel obtusis, basi cuneatis deinde decurrentibus, margine crenulato-serrulatis, glabris, supra olivaceis, inter venas dense reticulatis, subtus brunneo-olivaceis, reticulatis, glandulosis, glandulis minutis sine lente manifestis, costa utrinque prominula, venis utrinsecus 6–8, oblique ascendentibus prope marginem furcatis et arcuatim conjunctis utrinque paululo elevatis; petiolo 2–5 mm. longo; inflorescentiis 1.5 cm. longis, glabris; floribus 4-meris; pedicello 1 mm. longo; calycis lobis vix 2 mm. longis latisque, acutiusculis; petalis \pm 1 mm. longis, trifidis; filamentis 1.5 mm. longis, antheris apiculatis, 0.7 \times 0.5 mm.; disco 4-partito, gibberibus bilobis; stylis 1 mm. longis; ovario glabro, 2-loculare; loculis 2-ovulatis.

BRITISH NEW GUINEA: Central Division, Wharton Range, Murray Pass, *Brass 4661* (TYPE), June-Sept. 1933, alt. 2840 m.; common in forest borders (small tree or large bush 2–3 m. tall; leaves pale, stiff; flowers greenish, ovary brown).

In the size of the leaves this species approaches *S. ilicina* (Ridl.) Schltr.; but in the description of the latter there is no indication of glands on the leaves, whereas in this species they can be seen without a hand lens. Then too, the nerves are obvious and the stipules oblong.

Schizomeria gorumensis Schlechter in *Bot. Jahrb.* 52: 157, f. 7, *H-O.* 1914.

NETHERLANDS NEW GUINEA: 6 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 12566, 12599*, Feb., Mar. 1939, alt. 1300 and 1250 m., frequent on slopes in primary rain forest (tree \pm 25 m. high, bark brown or black, with some colorless resin; sapwood rose, heartwood dark brown, flowers white; fruits brown); 2 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13192*, Apr. 1939, alt. 800 m., frequent in primary rain forest; Bernhard Camp, Idenburg River, *Brass & Versteegh 13566*, Apr. 1939, alt. 570 m., occasional in primary rain forest (tree 21 m. high, 53 cm. diam.; bark brown, with a little light red resin; sapwood rose, heartwood dark brown; flowers light yellow).

The leaves are acuminate but mostly not obtusely so, and there is a slight variation in both the size (4.5–7.5 cm. long, 1.2–2.5 cm. broad) of those of the first two collections cited above, and also in the length of the petiole (5–7 mm. long); nevertheless, the lack of apparent floral differences or those of foliar texture suggests that these collections belong to *S. gorumensis* Schltr. The last two collections cited are almost a perfect match for the figure of *S. Ledermannii* Schlechter. However, the ovary is pilose with fairly short hairs rather than densely villous as given in the

original description, the flowers are hardly more than 1 mm. pedicellate, although the fruits (ovoid to subglobose \pm 1 cm. in diameter) are on pedicels 3–5 mm. long. If *S. Ledermannii* Schltr. is separable from *S. gorumensis* Schltr., these collections are more like *S. gorumensis* Schltr. in floral characters. On the under surface of the leaves, with the aid of a lens, one may find very minute and scattered glands.

***Schizomeria novoguineensis* Perry, spec. nov.**

? Arbor \pm 6 cm. diam.; ramulis \pm atro-cinereis, glabris; stipulis oblongis acutiusculis, resinosis, 4 mm. longis, vix 2 mm. latis; foliis coriaceis, ovato-ellipticis vel lanceolato-ellipticis vel ovatis, 5.5–9.5 cm. longis, 2.8–5 cm. latis, apice anguste obtusis vel acutiusculis, basi subrotundatis vel cuneatis, margine crenatis, utrinque glabris, novellis puberulis, subtus consperse et minutissime glandulosis, venis primariis utrinsecus 13–17 supra manifestis, subtus prominulis, late patentibus fere horizontalibus, bifurcatis prope marginem anastomosantibus, venulis utrinque dense reticulatis; petiolo 0.7–1.8 cm. longo; inflorescentiis immaturis 5 cm. longis, ferrugineo-tomentellis; floribus 5–6-meris fere sessilibus, extus puberulis, calycis lobis ovatis, \pm 1.5 mm. longis, acutis; petalis \pm 1 mm. longis, trifidis, staminibus calycem aequantibus, antheris 0.5 mm. longis, ellipsoideis apiculatis; stylis 0.7 mm. longis, ovario dense tomentello, 2 (or 3)-loculare; loculis 4-ovulatis; infructescentiis 9 cm. longis; fructibus globosis 1.5 mm. diametro.

NORTHEAST NEW GUINEA: Ogeramngang, *Clemens 4763* (TYPE), Dec. 1936, alt. \pm 1170 m.; Matap, *Clemens 41075*, Feb.-Apr. 1940, alt. 1500–1800 m. (2.5 inches diameter; flowers dull cream color).

In the rather close and widely spreading primary veins this species approaches *S. orthophlebia*, but the leaves of the latter are oblong-elliptic and the fruit elongate-ovoid as well as much larger than that of *S. novoguineensis*.

***Schizomeria orthophlebia* Perry, spec. nov.**

Arbor usque 32 m. alta, 55 cm. diam.; ramulis glabris \pm compressis, nodis incrassatis; stipulis triangularibus 5–7 mm. longis, 5 mm. latis, obtusis, caducis; foliis \pm valde coriaceis, oblongo-ellipticis, 6–14 cm. longis, 2.5–6.3 cm. latis utrinque angustatis, basi rotundatis, apice obtusis vel acutiusculis (vel breviter et obtuse acuminatis), margine crenulato-serratis, utrinque glabris, novellis crispe pilosulis, cito glabratis, venis primariis utrinque distinctis utrinsecus costam 17–22 inferioribus subhorizontalibus superioribus oblique patentibus prope marginem arcuatim conjunctis utrinque dense reticulatis vel in vetustioribus supra obscure reticulatis; petiolo 0.8–1.7 cm. longo; (inflorescentiis immaturis, 3–10 cm. longis, tomentulosis, bracteis oblongis obtusis; alabastris non expansis, extus tomentulosis, calycis lobis intus versus apicem puberulis; antheris ellipsoideis apiculatis; ovario tomentello 2-loculari, loculis 4-ovulatis) infructescentiae axi 7–14 cm. longo, tomentello; fructibus 2–4 cm. longis, 1.2–2 cm. latis, oblongo-ovoideis, basi 2 mm. pedicellatis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass & Versteegh 10463* (TYPE), Oct. 1938, alt. \pm 2750 m., along a stream in forest, common (tree 32 m. high, 55 cm. diam.; bark brown, fairly smooth; fruit green); Bele River, 18 km. northeast of Lake Habbema, *Brass & Versteegh 11161*, Nov. 1938, alt. 2230 m., on slope of a ridge in secondary forest, common (tree 16 m. high, 34 cm. diam.; bark black, rough, flower-buds soft green).

In the material at hand this species is easily recognized by the crenulate-serrulate oblong-elliptic leaves with fairly numerous (straight for $\frac{3}{4}$ of the distance to the margin) and almost horizontal primary veins. No other species seen has elongate-ovoid obtusely pointed fruit. Apparently it develops only one seed. Even though the inflorescences are given as 3–10 cm. long, all are very immature, and it is quite possible that in those measuring 5–10 cm. long the subtending new leaves have dropped off in process of drying.

Schizomeria ilicina (Ridl.) Schlechter in Bot. Jahrb. 55: 194. 1918.

Cremnobates ilicina Ridley in Trans. Linn. Soc. II. Bot. 9: 41, pl. 3, figs. 56–63, pl. 4, fig. 55. 1916.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habbema, *Brass & Versteegh 11106*, Nov. 1938, alt. 2200 m., occasional in primary forest (tree 18 m. high, 30 cm. diam.; flower buds red; fruit green-brown); Balim River, *Brass & Versteegh 11188*, Dec. 1938, alt. 2160 m., in forested slopes (tree 15 m. high, 40 cm. diameter; flowers white; fruit green); 15 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 11932, Brass 12150*, Jan. 1939, alt. 1780 and 1800 m., one of the larger trees in the mossy forest, not common; 6 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 12571, 12583, 12763*; Feb. 1939, alt. 1300 and 1200 m., occasional in primary forest (tree 18–22 m. high, bark black, rough; fruit brown; flowers white); 4 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13114A, 13114*, Mar. 1939, alt. 900 and 850 m.; frequent in primary rain forest (tree 25 m. high, 56 cm. diam.; bark gray, fairly smooth; flowers white; fruits brown).

NORTHEAST NEW GUINEA: Ogeramnang, *Clemens 4650, 4794, 4997, 5114a, 6358*, Dec. 1936, Jan. 1937, and May 1937, alt. 1500, 1800, 1650, 1740, and 1750 m. respectively; in mossy forest (tree 75–85 ft. high); Sambanga, *Clemens 6845, 7744a*, Nov. 1937, alt. 1500–1800 m., margin of clearing in mountain forest (tree 10–12 inches in diameter; fruit pale khaki color); Matap, *Clemens 41027*, Feb.-Apr. 1940, alt. 1500–1800 m. (tree 2 ft. diam.; flower buds immature, pale).

In designating all these collections as *Schizomeria ilicina* (Ridl.) Schltr. possibly more than one entity is included; certainly great variability is shown. Unfortunately, we have flowers and fruit of only a few numbers; however, the obvious differences between the specimens and Ridley's description and figures will be noted.

In the first place Ridley's description indicates 5-merous flowers and the figure a 4-merous one. Of the several flowers examined in this study, all are either 5- or 6-merous; apart from that, their pistils do not match that in the figure. Ridley's description "ovarium . . . uniloculare, uniovulatum"

does not fit any *Schizomeria* which I have examined. Perhaps, Ridley assumed such a structure from an examination of the fruit; the styles sometimes are very short, but most of them are as long or almost as long as the calyx-lobes. In *Brass & Versteegh 12583* the inflorescence is 1.8 cm. long and glabrous, with flowers slightly smaller than those in the other collections. The leaves are $5-7 \times 2.5-4$ cm., and the reticulations of the leaf are very dense (the shallow hollows between the veinlets are about half as large as those in most of the other specimens). This specimen may represent *S. ilicina* (Ridl.) Schlechter in the strict sense of the specific definition. On the other hand, *Brass & Versteegh 13114A* has inflorescences up to 9 cm. long with slightly larger flowers, the axis and branchlets of the inflorescence \pm densely puberulous, and the leaves with a similarly dense but less easily distinguished reticulation. *Brass & Versteegh 11188, 13114*, and *Brass 12763* have puberulous or tomentulose inflorescences \pm 3 cm. and 7 cm. long respectively, leaves 4.5–14.6 cm. long, 2–6 cm. broad, the apex varying from rounded to subacute, the base mostly cuneate but sometimes rounded-cuneate or rounded, the margin \pm crenulate-serrulate, and both surfaces obviously somewhat more loosely reticulate than in the two specimens discussed above. The calyx-lobes are 2–2.5 mm. long, the petals about as long, the stamens as long or slightly longer, and the ovary 2–3-loculed, each locule 4-ovulate. Sometimes when the ovary is 3-loculed, one locule has only 2 ovules.

Brass & Versteegh 11106, 11188, 11932, and *Brass 12150* are specimens with fruit. The second has very immature fruits, some as small and narrow as in Ridley's description while others are almost as broad as long. In the other collections the fruit is subglobose and up to 2 cm. in diameter. The material from Northeast New Guinea in some specimens has leaves that are more coriaceous and larger ($7.5-17 \times 3.5-10$ cm.), but the flowers and fruit are very like those from Netherlands New Guinea.

Brass & Versteegh 12571 may not belong to this species but is surely very closely allied. The fruits are large, one measuring $4 \times 3.7 \times 3.5$ cm. The leaves are firmly coriaceous and rounded at the base. One very young reddish tomentulose inflorescence was collected. The bud-scales are round rather than oblong or lanceolate as in the other specimens of the species.

Schizomeria Whitei Mattfeld in Jour. Arnold Arb. 20: 435. 1939.

NORTHEAST NEW GUINEA: Boana, *Clemens 41770*, May-Nov. 1940, alt. 750–1350 m. (flowers dull flesh-gray).

After setting up this collection as a new species from New Guinea, I found I could not separate it in my key from *S. Whitei* Mattf. collected on the Atherton Tableland, Queensland. The leaves are slightly less brittle, the veins stand out a little more on the lower surface, the leaves are cuneate at base (but this is true in some of those in *Kajewski 1135*), and the inflorescence is slightly more tomentulose. These variations do not appear sufficient to be considered specific.

Schizomeria katastega Mattfeld in Jour. Arnold Arb. 20: 433. 1939.

Schizomeria tegens Mattf. op. cit. 434.

BRITISH NEW GUINEA: Western Division: Oriomo River, Wuroi, Brass 5804, Jan.-Mar. 1934, alt. 10-30 m., common in small forest clumps on savannah (tree 10-12 m. high; flowers white; pale fleshy fruit); Oroville Camp, Fly River, Brass 7429; Lake Daviumbu, Middle Fly River, Brass 7497, 7898; Gaima, Lower Fly River (east bank), Brass 8294.

Perhaps the field notes of Brass indicating two collections as canopy trees and the other two as substage trees is a little misleading. Without this I am sure it would be difficult to separate them. There is a slight variation in the size of the flowers, but such is true even in a single collection. I am not sure that *S. homaliiformis* Kaneh. & Hatus. is distinct from this species. On the whole the flowers are smaller and more numerous, but the inflorescences are still young.

Schizomeria Brassii Mattfeld in Jour. Arnold Arb. 20: 435. 1939, vel aff.

SOLOMON ISLANDS: Bougainville: Koniguru, Buin, *Kajewski 2015*, Aug. 1930, alt. 800 m., rain forest (tree up to 30 m.); Hogoro, Maisua, *Waterhouse 81*, Sept. 1932, alt. \pm 360 m. (tree 40 ft.). Guadalcanal: Uulolo, Tutuve Mt., *Kajewski 2580*, Apr. 1931, alt. 1200 m., rain forest (tree up to 30 m. high; bark covered with large corky pustules; fruit 1.3 cm. long, 1.5 cm. diam.). Ysabel: Tataba, Brass 3428, Jan. 1933, alt. 50 m., rain forest ridges, common (very large flanged tree with deeply channelled rough gray bark and hard brown wood; leaves smooth and shining; flowers white).

The type-specimen of *S. Brassii* Mattf. has only fruits and leaves. These are a fairly good match for *Kajewski 2580* from Guadalcanal. Until an isotype of *S. floribunda* Schltr. and good material of *S. serrata* Hochr. is available for study with this species, these determinations must be accepted as tentative.

Schizomeria Clemensiae Perry, spec. nov.

Arbor magna; ramulis atro-cinereis vel brunnescentibus 5-8 mm. diametro, novellis tomentellis; stipulis non visis; foliis coriaceis, ovato-ellipticis 8.5-19 cm. longis, 4.5-8.5 cm. latis, apice obtusis vel subrotundatis, basi rotundatis deinde in petiolo breviter decurrentibus, margine crenulatis, in sicco olivaceis, supra inconspicue subtus manifeste reticulatis, venis primariis utrinsecus 12-17 patenti-ascendentibus, prope marginem furcatis \pm anastomosantibus, supra perspicuis, subtus prominulis, petiolo 1.7-3.5 cm. longo, subrotundato; inflorescentiis \pm 12 cm. longo, ferrugineo-tomentellis; bracteis rotundatis; pedicello 1 mm. longo; flore extus ferrugineo-tomentello vel dense puberulo, expanso 7-8 mm. lato; calycis lobis 3-3.5 mm. longis, 1.8-2.5 mm. latis, ovatis, acutis; petalis 2.5 mm. longis longitudine $\frac{1}{3}$ superiore trifidis; filamentis vix calycis lobos aequantibus, antheris 1 mm. longis 0.7 latis, cordatis, apiculatis; disco 10-gibbo, gibberibus subglobosis 0.8 mm. diametro; ovario 2-3-loculari, dense tomentoso, loculis 4(-5)-ovulatis; stylis 2 vel 3, circiter 2.5 mm. longis;

fructibus novellis ellipsoideis (2×1.5 cm.), maturis globosis, 3 cm. diametro.

NORTHEAST NEW GUINEA: Sattelberg, *Clemens 439* (TYPE), 1248, Oct. 1935, alt. ± 900 m., margin of forest (tree 50 ft.; flower dull yellow, of the same odor as the fruit); Quembung, *Clemens 2180*, March 1936, alt. ± 600 m., margin of forest (tree of giant size; fruit russet).

This species is perhaps most closely related to *S. Versteeghii*, but in the latter the leaves are crenate-serrate rather than crenulate, the petioles are not more than half as long, and the flowers are sessile.

Schizomeria Versteeghii Perry, spec. nov.

Arbor 27 m. alta, 46 cm. diam.; ramulis glabris crassis sub inflorescentia ± 1 cm. diam., cortice cinereo vel brunnescente \pm rimoso; stipulis non visis; alabastris axillaribus parvis vernicosis; foliis valde coriaceis ellipticis, 10.5–22 cm. longis, 5.7–14 cm. latis, apice rotundatis, basi rotundatis, margine crenato-serratis, utrinque glabris, venis primariis utrinsecus 17–19 inferioribus oblique patentibus superioribus patenti-ascendentibus, marginem versus furcatis vel bi- et tri-furcatis \pm anastomosantibus supra distinctis, subtus prominulis, venis secundariis subtus manifestis, venulis utrinque dense reticulatis; petiolo 0.5–1.5 cm. longo, crassiusculo; inflorescentiis 10–16.5 cm. longis, 15–18.5 cm. latis, saepe basin prope ramosis, multifloris, tomentosis; axi et ramulis crassiusculis; bracteis rotundatis, concavis, 5 mm. longis, 5 mm. latis, caducis; alabastris 7 mm. longis, 5.5 mm. latis, sessilibus; floribus expansis (siccis 9 mm.), 1.2 cm. latis, 5–6-meris; calycis lobis ± 4 mm. longis, 2 mm. latis, ovatis vel lanceolatis, acutis, intus margine et apice puberulis, ceterum glabris; petalis 3.5–4 mm. longis, trifidis, laciniis exterioribus saepe longioribus; filamentis 3.5–4 mm. longis, antheris ellipsoideis, 1 mm. longis, 0.7 mm. latis, apiculo paulo recurvato; disco 10–12-gibbo, 1 mm. alto, 0.9 mm. crasso; stylis 2 vel 3, 2–2.5 mm. longis; ovario tomentoso, 2.5 mm. diametro; loculis 2–3, 4–6-ovulatis, ovulis biseriatis; fructibus immaturis, subglobosis vel late ellipsoideis, ± 1.5 cm. diametro.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habema, *Brass & Versteegh 11129* (TYPE), Nov. 1938, alt. 2300 m., occasional in primary forest (tree 27 m. high, 46 cm. diam.; bark 9 mm. thick, gray, rough, fissured, with a little yellow sap; flowers white; fruits brown).

Schizomeria Versteeghii is most like the collections which have been placed in *S. floribunda* Schltr. The former differs in the much shorter petioles, the crenate-serrate rather than crenulate leaves, and the considerably larger sessile flowers.

AISTOPETALUM Schlechter

At hand are four numbers of the Third Archbold Expedition plants which seem to belong to *Aistopetalum* Schltr. Two have fruits, one has both flowers and fruits, and the other only flower-buds. In addition there is an isotype of *A. tetramerum* Kaneh. & Hatus. The flower-buds of the

latter are so young that it is impossible to determine without dissection whether tetramerous or pentamerous flowers predominate. The specimens *Brass & Versteegh 12513* and *Brass 13170* have both 5- and 6-merous flowers. In one instance a pentamerous flower had six carpels, and in another a hexamerous flower had five carpels. One of the characters indicated in the original description is two collateral ovules in each carpel, a character re-affirmed in the description of *A. tetramerum* Kaneh. & Hatus. Although several flowers from the above specimens have been dissected, none of them appear to have more than one pendent ovule in each carpel. The fruits are ovoid or oblong. The exocarp is fleshy and in some of the dried fruits irregularly cracked at the apex, the endocarp or putamen is bony, 5-6-celled, and at the apex 5-6-pointed bony projections cover a soft area through which probably the germinating seed pushes out. The seed is tear-shaped, the embryo is very slightly fleshy and embedded in endosperm with the radicle pointing toward the apex of the fruit.

Aistopetalum viticoides Schltr. in Bot. Jahrb. 52: 144, f. 2, A-F. 1914; vel aff.

NETHERLANDS NEW GUINEA: 6 km. SW. of Bernhard Camp, Idenburg River, *Brass & Versteegh 12513, 12565, Brass 13286*, Feb., Mar. 1939, alt. 1500, 1280, and 1200 m. respectively, primary forest, on slopes of ridge (occasional tree 15-28 m. high, 15-59 cm. diam.; flowers yellow; fruit orange or yellow); 2 km. SW. of Bernhard Camp, Idenburg River, *Brass & Versteegh 13170*, Mar. 1939, alt. 900 m., primary rain forest, on slope of ridge (frequent tree 20 m. high, 45 cm. diam.; flower-buds yellow-green).

Without more material it is difficult to decide whether the fact that *Brass 13286* and *Brass & Versteegh 12565* have ovoid fruits and *Brass 12565* oblong fruits constitutes a specific difference or only a variation within a species. The ovoid fruits are 1.5-2 cm. long and 1.1-1.9 cm. in diameter, the oblong are 2.2-2.5 cm. long and 1.5 cm. in diameter. The foliar differences are intangible; perhaps the venation in *Brass 12565* is a little less open than in the other specimens. There are no flowers for comparison. There are simple, trifoliolate, and 5-foliolate leaves in specimens of the same collection, sometimes on the same specimen. Schlechter mentions only trifoliolate leaves, but in the figure of the species simple leaves are also shown.

The seed in the fruit opened was about 1 cm. long, the embryo nearly as long, with the cotyledons about twice the length of the radicle.

WEINMANNIA L.

Weinmannia purpurea Perry, spec. nov.

Arbor usque 30 m. alta, glabra; ramulis gracilibus 2-3 mm. diametro, atro-brunnescentibus, levibus, laxe foliatis; stipulis connatis, cito caducis; foliis simplicibus, tenuiter coriaceis, lanceolatis, 8-17 cm. longis, 2.5-4.5 cm. latis, apice obtuse acuminatis, basi cuneatis, margine serrato-dentatis, verisimiliter glanduloso-dentatis, utrinque laxe reticulatis, supra \pm nitidis,

venis primariis utrinsecus 13–20 utrinque manifestis, non prominulis; petiolo 0.5–1.5 cm. longo; racemis plerumque ternis in pedunculo communo, usque 16 cm. longis; axi puberulo; pedicellis 2 mm. longis, sparsim puberulis; floribus 4-meris, pallide purpureis; calyce glabro, lobis 1 mm. longis, oblongo-lanceolatis obtusis; petalis ellipticis 1.5 mm. longis, 1 mm. latis; staminibus 2 mm. longis, antheris apiculatis; glandulis cylindricis, vix 1 mm. longis; ovario sparsim puberulo, stylis circiter 1.2 mm. longis; capsulis oblongis, 6 (stylis inclusis) mm. longis, seminibus (siccis) 1 mm. longis, 0.3 mm. latis, utrinque barbato-pilosis, pilis circiter 1 mm. longis.

SOLOMON ISLANDS: Bougainville: Kupei Gold Field, *Kajewski 1738* (TYPE), April 1930, alt. 100 m., rain forest (tree up to 20 m. high, found growing at very high altitudes; flowers very pale purple on purple stalks; fruit purple, length including styles 6 mm., 1.5 mm. diam.).

Most of the racemes are in threes at the apex of a common peduncle 3–6 cm. long, but in one instance there are two nodes; the lower one has two opposite racemes and the upper has three.

From the description of *W. marquesana* F. Brown, it seems as if these might be related species. The latter has broader and shorter leaves with longer petioles; nothing is said of the stipules. In *W. purpurea*, the short connate stipules, although loose, still encircle the base of the inflorescence and the younger branchlets.

Weinmannia Ledermannii Schlechter in Bot. Jahrb. 52: 162. 1914.

NORTHEAST NEW GUINEA: Wareo, *Clemens 1407*, Dec. 1935, alt. \pm 600 m., margin of jungle (tree 100 ft. high; flowers cream-colored; fruits pale tinged with pink).

The leaves of this collection are 2–5-jugate, the petiole and rhachis are shortly and somewhat densely pilose, the midrib on the lower surface of the leaflets is less densely so. The axis of the inflorescence is only puberulous. Apart from these differences in pubescence the specimen agrees with the description reasonably well.

Weinmannia urdanetensis Elmer, Leaflet Philipp. Bot. 7: 2608. 1915.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 11908*, Jan. 1939, alt. 1800 m., frequent in mossy-forest of ridges (tree 26 m. high; flowers white; fruit red); 8 km. southwest of Bernhard Camp, Idenburg River, *Brass 12733*, Feb. 1939, alt. 1600 m., one of the principal trees in the mossy forests at this altitude.

For the time being I have placed these collections in *W. urdanetensis* Elmer, originally described from the Philippines. There is at hand an isotype of this species and another collection in young fruit (seeds immature) from Mt. Palimlim, Luzon. The lower leaves of the latter specimen are a little larger than in the type and about the same size as the smaller ones in the New Guinean collections. The leaves in these are 4–9-jugate, the lateral leaflets are 0.9–1.8 cm. long and the lower surface is more pilose than in the Philippine material, in which the lower surface is often glabrous except for a few hairs along the midrib; here also the veins are a little less easily seen than in the New Guinean collections. In the latter,

the mature capsules are 4–4.5 mm. long (including the 1 mm. style), the seeds 0.8–0.9 mm. long 0.4 mm. wide, not including the tufts of hairs at the ends of the seeds.

Weinmannia novoguineensis Perry, spec. nov.

Arbor parva, 10–13 cm. diam.; ramulis puberulis vel breviter pilosis; stipulis subreniformibus intus glabris, venosis, extus puberulis, 6–8 mm. longis, 1 cm. latis; foliis 4–10 cm. longis, 4–13-jugis, foliolis chartaceis vel tenuiter coriaceis, serratis, supra costa puberula excepta glabris, subtus costa praecipue parte inferiore dense et breviter pilosa excepta plerumque glabris nonnumquam hinc inde pilis conspersis, terminali lanceolato acutiusculo, 2.2–3 cm. longo, 0.7–1 cm. lato, petiolulo circiter 3 mm. longo, lateralibus 1–2.4 cm. longis, 0.5–0.8 cm. latis, oblongis utrinque angustatis, apice acutiusculis vel obtusiusculis, basi inaequaliter obtusis sessilibus; petiolo vix 1 cm. longo et rhachide \pm crispe pilosulis; infructescentiis \pm 8 cm. longis, axi puberulo vel \pm pilosulo; pedicellis 2–3 mm. longis, puberulis; floribus 4-meris; calycis lobis 1 mm. longis, 0.7 mm. latis, glabris; petalis et staminibus non visis; glandulis 0.5 mm. longis; capsula circiter 6 mm. longa (incl. stylis 1.5 mm.), seminibus 1 mm. longis, 0.4 mm. latis, \pm pilosulis.

NORTHEAST NEW GUINEA: Sarawaket, *Clemens 7517* (TYPE), Nov. 1937, alt. 1800–2400 m., in mountain forest (small tree 4–5 inches diameter; fruit pale green).

This species differs from *W. Pullei* Schltr. in the sessile leaflets with pubescent midrib on the lower surface, the more heavily pubescent leaf rhachis, the longer pedicels, and the glabrous calyx.

Weinmannia trichophora Perry, spec. nov.

Arbor 12–15 cm. diam.; ramulis parvis tomentosis dense foliatis; stipulis subreniformibus, 4 mm. longis, 5 mm. latis, intus basin versus et extus breviter appresse pilosis; foliis 2–5 cm. longis, 2–7-jugis, foliolis subcoriaceis serrulatis, supra consperse puberulis, subtus (costa dense) breviter appresse pilosis, pilis crispulis, terminali 1–1.5 cm. longo, 0.5–0.7 cm. lato, oblongo obtusiusculo vel acutiusculo, petiolulo circiter 2 mm. longo, lateralibus 0.8–1.6 cm. longis, 0.4–0.6 cm. latis, oblongis acutiusculis vel obtusis, basi vix inaequaliter obtusis sessilibus; petiolo 3–6 mm. longo et rhachide tomentosis; inflorescentiis \pm 5 cm. longis, axi breviter piloso; pedicellis 1.5 mm. longis puberulis; floribus 4-meris, ante anthesin; calyce puberulo, lobis ovatis obtusis 1 mm. longis, 0.7 mm. latis; petalis 1.5 mm. longis, 1 mm. latis, ellipticis; antheris minute apiculatis; glandulis fere 0.4 mm. longis; ovario pubescente, stylis glabris.

NORTHEAST NEW GUINEA: vicinity of Samanzing, *Clemens 9498* (TYPE), Jan. 1939, alt. 2100–2400 m., in mountain bush (tree 5–6 in. diam.; flowers white-cream).

This species may be related to *W. urdanetensis* Elmer, but the leaves are smaller, the leaflets shorter and broader and much more pubescent on the lower surface.

Weinmannia ysabelensis Perry, spec. nov.

Arbor 25 m. alta; ramulis gracilibus, novellis \pm 2 mm. diam., breviter et patenti-pilosulis, internodiis 1–2 cm. longis; stipulis cito caducis, non visis; foliis (petiolo incluso) 3.5–7.5 cm. longis, 1–4-jugis, foliolis tenuiter coriaceis vel chartaceis, crenulato-serratis, supra atro-olivaceis, glabris, subtus pallidioribus, costa \pm pilosulis, supra laxe subtus dense reticulatis, terminali majore, 2.7–4 cm. longo, 0.8–1 cm. lato, lanceolato, acuto, petiolulo 2–3 mm. longo, lateralibus 1–2.3 cm. longis, 0.5–0.9 cm. latis, oblongo-lanceolatis, apice acutiusculis, basi inaequaliter obtusis, sessilibus vel subsessilibus; petiolo 0.5–1 cm. longo et rhachide supra subplanis obscure marginatis margine glabris, ceterum utrinque patenti-pilosulis; inflorescentiis 5–8 cm. longis, singulis vel binis, axi puberulo; pedicellis \pm puberulis, 2 mm. longis; floribus 4-meris; calycis basi hinc inde minute pilis dispositis, lobis vix 1 mm. longis, ovato-oblongis rotundatis; petalis 1.4 mm. longis, obovato-ellipticis; filamentis 1.4 mm. longis, antheris 0.5 mm. longis minute apiculatis; glandulis cylindricis, 0.4 mm. longis, 0.15–0.2 mm. latis; stylis fere 1 mm. longis, ovario pubescente, circiter 1 mm. longo, 0.7 mm. diam.; capsulis (stylis fere 2 mm. inclusis) 5–6 mm. longis, 1.5 mm. diam.; seminibus circiter 1.5 mm. longis, 0.5 mm. latis, \pm pilosulis.

SOLOMON ISLANDS: Ysabel: Tiratona, *Brass* 3215 (TYPE), Nov. 1932, alt. 600 m., mountain forests, common (thick-boled tree 25 m. tall; reddish brown flaky bark and hard red wood; flower white; fruit pink).

We have no specimens at hand which suggest a close relationship with this species. *Weinmannia virgulata* Schltr. has 2–4-jugate leaves, but 3-merous flowers; *W. Macgillivrayi* Seem. has 5–9-jugate leaves with larger leaflets. It should be noted that the seeds have scattered hairs on the surface, not confined to the ends as in *W. Versteeghii*.

Weinmannia Versteeghii Perry, spec. nov.

Arbor 19 m. alta, 25 cm. diam., fere glabra, ramulis cinereo-brunnescentibus, novellis \pm ferrugineis, minute et sparsim puberulis, ultimis gracilibus, \pm 1 mm. diam.; stipulis subrotundatis 4–7 mm. longis latisque, extus sparsim et minute appresse puberulis; foliis 2.5–5 cm. longis, 1–4-jugis, foliolis glabris, terminali obovato basi anguste cuneato, subsessili, lateralibus oblanceolatis, sessilibus, 0.7–1.8 cm. longis 0.4–0.7 cm. latis, apice obtusis basi anguste et inaequaliter obtusis, margine minute crenulato-serratis, supra (in sicco) atro-olivaceis, costa pallidiora, subtus pallidioribus, venis primariis ascendentibus \pm anastomosantibus utrinque manifestis; petiolo 6–10 mm. longo et rhachide anguste marginatis; racemis vulgo singulis 4–8 cm. longis, axi minute puberulo; floribus 4-meris; calycis lobis 1.3 mm. longis, obtusis, petalis obovato-ellipticis, 1.7 mm. longis, 1.4 mm. latis, rotundatis sparsim ciliolatis; filamentis vix 3 mm. longis; glandulis cylindricis vix 1 mm. longis; ovario puberulo, 2 mm. longo, stylis vix 1 mm. longis; capsulis 6 mm. longis, puberulis, seminibus 1.5 mm. longis utrinque barbato-pilosis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass & Versteegh 10469* (TYPE), Oct. 1938, alt. \pm 2700 m., frequent in forest (sub-stage tree 19 m. high, 25 cm. diameter; bark 4 mm. thick, gray-brown, rough; outer wood yellow, inner red).

This is the only species reported from New Guinea with the narrowly margined petiole and rhachis. In habit it suggests *W. tannaensis* Guilaumin, but in the latter the leaflets are narrower at the apex, and the margin of the petiole and rhachis is broader.

PULLEA Schlechter

In the consideration of the genus *Pullea* Schltr. I am indebted to Dr. F. P. Jonker for very generously providing for comparison two leaves and a branch of the inflorescence from the original collections of *P. glabra* Schltr.

KEY TO THE SPECIES

Flowers tapering into a very short (about 1 mm. long) stipe.....*P. glabra*.
Flowers sessile.

Leaves velvety-pubescent beneath.....*P. mollis*.

Leaves glabrous or only sparsely puberulous with minute hairs.

Leaves acute or very obtusely short-acuminate.

Flowers 10-12 on a cluster; leaves very obtusely short-acuminate, lower surface fasciculate-barbate in axils between the primary veins and the midrib.....*P. Versteeghii*.

Flowers 5-7 in a cluster; leaves acute, not fasciculate-barbate.....*P. decipiens*.

Leaves obtuse, rounded, or emarginate.

Stipules subulate; leaves small, \pm 5.4 \times 3 cm., reticulations prominent.....*P. papuana*.

Stipules oblong-lanceolate, obtuse; leaves larger, 4-9 \times 3-6 cm., reticulations not prominent.....*P. Clemensiae*.

Pullea decipiens Perry, spec. nov.

Arbor 29 m. alta, 45 cm. diam.; cortice novello nigrescente, vetustiore brunneo-cinereo, glabro, lenticellato; foliis in sicco brunnescentibus subtus paullo pallidioribus, coriaceis, lanceolatis vel elliptico-lanceolatis, 3-7.5 cm. longis, 1-3 cm. latis (av. 5-6 \times 2.5 cm.), apice acutis, basi cuneatis in petiolum 3-6 mm. longum angustatis, margine crenulatis, utrinque glabris, venis primariis utrinsecus 7-10, supra manifestis subtus prominulis, venulis creberrimis dense reticulatis; inflorescentiis puberulis, paniculatis, lateralibus vel apicalibus, 2.5-6 cm. longis, saepe 7 ex ramulorum apice ortis; axi 1-3 cm. longo, ramulis 2-8-natim verticillatis nonnumquam iterum verticillatis, 3-15 mm. longis; floribus (post anthesin) parvis, sessilibus, in capitulis (\pm 5-floris); calycis lobis 1.5-1.9 mm. longis, 0.7-1.0 mm. latis, oblongis, obtusis, membranaceis; staminibus circiter 3 mm. longis; disci squamis 0.2-0.3 mm. longis latisque, apice incrassatis, emarginatis, bifoveolatis; stylis 2, liberis, circiter 3 mm. longis, basi exceptis glabris; ovario hemi-infero, extus 1 mm. longo.

NETHERLANDS NEW GUINEA: 4 km. SW. of Bernhard Camp, Idenburg River, *Brass & Versteegh 13115* (TYPE), March 1939, alt. 850 m., primary rain forest on plain; common tree 29 m. high, 45 cm. diam.; bark gray, scaly; wood red-brown; flowers light yellow).

This species of *Pullea* seems to be most like the description of *P. papuana* Gibbs. It differs in having acute, distinctly crenulate leaves with lateral veins more raised than the reticulate areas between them, and flowers with obtuse calyx-lobes. Possibly more material would show the two are identical. One needs to examine the type to evaluate the differences. *Pullea papuana* Gibbs is described as having obtuse minutely denticulate leaves, and acute calyx-lobes.

Pullea Versteeghii Perry, spec. nov.

Arbor usque 31 m. alta, 48 cm. diam.; cortice novello brunnescente, vetustiore pallidiore, glabro, lenticellato; foliis ellipticis vel oblongo-ellipticis, 4.5–10 cm. longis, 2.5–5 cm. latis, apice breviter et obtusissime acuminatis, acumine 4–6 mm. longo latoque, basi obtusis deinde breviter cuneatis, margine crenulato-denticulatis, supra olivaceis glabris, subtus brunnescentibus, venis primariis \pm pubescentibus, in axillis inter costam et venas fasciculato-barbatis, utrinsecus 7–9 patenti-adscendentibus marginem versus breviter furcatis supra perspicuis, subtus prominulis, venulis laxe reticulatis utrinque paullo elevatis sine lente manifestis, minoribus copiose reticulatis supra obscuris subtus sub lente manifestis; petiolo 0.5–1 cm. longo; inflorescentiis dense puberulis, paniculatis, axillaribus et apicalibus, usque 8 cm. longis latisque, circiter 7 ex ramulorum apice ortis; axi 1.5–4 cm. longo; ramulis 2–8-natis verticillatis, nonnumquam iterum verticillatis, 6–20 mm. longis, bracteis 1–1.5 mm. longis vix 0.5 mm. latis, oblongo-ovatis; floribus (post anthesin) parvis sessilibus, in capitulis (circiter 9–12-floris); calycis lobis 2 mm. longis, 1.5 mm. latis; staminibus 2.7 mm. longis; disci squamis 0.5 mm. longis, vix 0.4 mm. latis, apice incrassatis et fere planis; ovario extus \pm 1 mm. longo, apice subconico; stylis 2.5–3 mm. longis inferiore $\frac{1}{3}$ pubescentibus.

NETHERLANDS NEW GUINEA: Bele River, 18 km. NE. of Lake Habbema, *Brass & Versteegh 11123, 11146* (TYPE), 11147, Nov. 1938, alt. \pm 2300 m., primary and secondary forest (rare tree 13–31 m. high, 35–48 cm. diameter; bark 4–9 mm. thick, rough, white (brown in 11147); flowers white); Balim River, *Brass & Versteegh 11185*, Dec. 1938, alt. 2160 m., forest of the slopes.

The immediately distinctive character of this species is found on the lower surface of the leaves, the tufts of hair in the axils between the midrib and the primary veins. Also there is a coarse reticulation which can be seen with the naked eye as well as a finer one visible on the under surface only with the aid of a lens. The contrast in the reticulation is much more marked than in *P. decipiens*. The flowers are in clusters of 9–12. The style is more or less pubescent the lower third of its length. *Brass & Versteegh 11147* has lanceolate rather than elliptic leaves, 3–10 cm. long, 1.5–4 cm. wide, and flowers slightly smaller than in the specimen designated as the type.

***Pullea Clemensiae* Perry, spec. nov.**

Arbor 45–90 cm. diam.; cortice brunnescente vel cinereo-brunnescente, lenticellato, glabro, novello minute appresse pubescente; alabastris, stipulis (obtusely oblongo-lanceolatis cito caducis) et foliis novellis dense cinereo-pubescentibus; foliis coriaceis, ellipticis 4–9 cm. longis, 2.3–6 cm. latis, in sicco brunnescentibus apice rotundatis vel obtusis, basi cuneatis, margine inconspicue serrulatis, supra glabris subtus consperse puberulis vel fere glabris, venis primariis utrinsecus \pm 8 oblique ascendentes prope marginem furcatis supra distinctis, subtus prominulis, venulis laxe reticulatis utrinque manifestis non conspicuis; petiolo 1–1.5 cm. longo; inflorescentiis 4–5 cm. longis, fractis dense cinereo-pubescentibus, pilis brevibus \pm appressis; capitulis 5–7-floris; floribus basi bracteatis, bracteis 1–1.5 mm. longis, 1 mm. latis, oblongis obtusis; fructibus sessilibus pubescentibus, calycis lobis 1.5 mm. longis, 1 mm. latis, obtusis vel acutiusculis; filamentis 2 mm. longis; disco squamis \pm 0.3 mm. longis; ovario maturo 2 mm. diam., 1.5 mm. longo; stylis 3 mm. longis; semine levi subrotundato 1 mm. longo, 0.9 mm. lato, compresso.

NORTHEAST NEW GUINEA: above Samanzing, *Clemens 8989*, Oct. 1938, alt. \pm 1800 m., in mountain bush (tree 18 in. to 2 ft. diam.); Samanzing, *Clemens 9068* (TYPE), Oct. 1938, alt. \pm 1800 m., (tree 2–3 ft. diam.); Samanzing vicinity, *Clemens 9283A*, Nov. 1938, alt. 1200–1800 m., in mountain bush (tree 10–12 in. diam.; flower buds yellowish green); Wantoat (Wantot), *Clemens 10995*, Jan. 1940, alt. 1050–1800 m. (tree 40–50 ft. high; flowers pale green-white).

The specimens *Clemens 8989* and *9068* are in fruit. On some branchlets of the inflorescence where the fruits have already fallen the bracts are still on the axis. In the other two collections the flowers are in bud, but in *Clemens 9283* the bracts subtending the minute flowers have already fallen. The leaves somewhat resemble those of *P. Versteeghii*, but are not fasciculate-barbate in the axils between the primary veins and the midrib, and the apex is mostly rounded; further, the inflorescences are not nearly so large or so copiously flowered.

ARNOLD ARBORETUM,

HARVARD UNIVERSITY.